FIRE PROOFING OF STEEL WORKS

Fire proofing with intumescent paint is the most modern & internationally accepted method for protection of steel structures, flammable liquid units & storage vessels against the damaging effect of fire. Intumescent paint when used in conjunction with detection devices represents an important segment of overall loss prevention.

Current architectural concept for high rise building rely more on rafter type construction avoiding concrete beams resulting in space saving and greater economy.

In the event of fire the decorative “LEXUS” STEELBAR FR-1101 quickly encloses the steel in reliable carbon which slows down the temperature rise in steel & protects the construction against premature collapse upto two hours.

WHY FIRE PROOFING OF STEEL

Steel looses its structural strength upon heating. As soon as the temperature approaches 538° C (1000° F) it looses 60% of its yield strength. At 1000° F in a fire load bearing member is bound to fail. Thus it is necessary to protect steel structures from fire.

Studies in Europe & U.S.A over the last two decades have conclusively proven the fact that intumescent paints have definite advantages over the conventional methods of Steel Fire Proofing. The most important of all the considerations is a very high degree of corrosion resistance properties which, due to passage of time cause immense problems with concrete/cementitious coatings.

Cement/Gunite/Cementitious coatings are known to get damaged due to acid or corrosive environment & inevitable entry of moisture, thus causing cracks after some period of time. In case of Concrete/Gunite protection cracks are known to appear even during the curing process due to shrinkage. On the other hand the “LEXUS” STEEL BAR FR-1101, because of its excellent adhesion and corrosion resistance properties, not only is resistant to corrosion but also prevents it.
FIRE PROTECTION OF STEEL WITH STEEL BAR FR-1101

“LEXUS” STEELBAR FR-1101 is a smooth, thin, easy to apply coating, which replaces the traditional labour intensive cladding and encasement method. “LEXUS” STEELBAR FR-1101 is an intumescent (it swells when heated) paint that protects structural steel work from fire.

The ability of FR-1101 to retard the rate of heat transfer results from the chemical characteristics of its constituents. At a temperature of more than 250°C, they undergo a series of reaction that creates an expended low density foam structure, with excellent heat insulating properties. This low conductivity carbon char forms a barrier between the fire and steel surface, substantially decreasing the temperature rise of the metal, effectively protecting it during the severest of fire.

SYSTEM OFFERED

The fire protection to steel with solvent based “LEXUS” STEELBAR FR-1101 consists of the application of:-

1. PRIMER COATING USING “LEXUS” STEEL BAR FR-1101 (R.F.U)

“LEXUS” STEELBAR FR-1101 (R.F.U) is non flammable (when dry) anti-corrosive primer which provides a very high degree of corrosion resistance to the substrate. For steel work, which is already primed, only one coat is required.

Coverage of the primer is 10-11 Sqm per Ltr Coat.

2. “LEXUS” STEELBAR FR-1101

“LEXUS” STEELBAR FR-1101 is applied in multiple coats at short intervals. It is a non–porous coating which is corrosion resistance totally water & acid/alkali resistant with excellent adhesion properties to the steel and aluminium surface. The coating has a high degree of flexibility, thus preventing the formation of cracks due to the thermal expansion of steel work. No lathing or reinforcement is required as the coating is very thin.

3. TOP COAT

Use top coat for structural steel work exposed to weathering or for use in room with wet or humid ambient conditions.

- Coats required 2 Nos
- Coverage 9-10 Sqm per Ltr per coat.

Specialists In: Fully Insulated Steel Fire Proof Doors (Hinged & Sliding upto 4hrs Fire Rating); Fire Rated Panic Bars Briton/Econ/Dorma etc); Cylindrical Lock; Fire Rated Hardwares; Fully Insulated Wooden Fire Doors; Sliding Doors (Steel & Wooden); Four Point Latching System; Structural Steel Fire Coating upto 2hrs Fire Rating; Fire Retardant Paint/Polish; Fire Retardant Antibacterial Paint; Fire & Corrosion Resistant Paint; Fire Protection Systems; Cable Fire Resistant Coatings; Cable Fire Barrier (Conventional & Cementitious); Clear Solution for Flame Proofing of Fabrics; Ordinary and Fire Proof Rolling Shutters; Fire Rated Pilkington/Central/Schott/Promat/Glaverable Glass upto 2hrs Fire Rating; Industrial Coatings for Boilers & Chimneys; Heat Resistant Paint 300/600/900/1200 Deg.C; Fire Sealants upto 6hrs Fire Rating; Flame Proof Hessain/Modular Panels/Tents/Tarpaulene/Canvas; Rust Converter; Paint Removers. etc.
# TECHNICAL DATA SHEET FOR STEEL BAR FR-1101 & PRIMER FR-1101 (RFU)

<table>
<thead>
<tr>
<th></th>
<th>“LEXUS” STEEL BAR - 1101</th>
<th>PRIMER FR – 1101 (RFU)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colour</strong></td>
<td>Off White / Dark Admiral Grey as per IS : 5-1978</td>
<td>Pink</td>
</tr>
<tr>
<td><strong>Finish</strong></td>
<td>Textured Matt</td>
<td>Smooth &amp; Uniform</td>
</tr>
<tr>
<td><strong>Drying time for each Coat</strong></td>
<td>Touch dry – 08 hours</td>
<td>2 Hours</td>
</tr>
<tr>
<td></td>
<td>Hard dry – 72 hours</td>
<td>24 Hours</td>
</tr>
<tr>
<td><strong>Thinner</strong></td>
<td>Setter WP – 913 ( If Required)</td>
<td>Setter WP- 913 ( If Required)</td>
</tr>
<tr>
<td><strong>Flash Point</strong></td>
<td>Above 30°C</td>
<td>Above 30°C</td>
</tr>
<tr>
<td><strong>Solid Contains</strong></td>
<td>67% Approx.</td>
<td>58 % Approx</td>
</tr>
<tr>
<td><strong>Scratch Hardness</strong></td>
<td>Conforms to IS :101</td>
<td>Conforms to IS :101</td>
</tr>
<tr>
<td><strong>Specific Gravity</strong></td>
<td>1.25</td>
<td>1.15</td>
</tr>
<tr>
<td><strong>Resistance to Lubricant oil</strong></td>
<td>Conforms to IS :101</td>
<td>Conforms to IS :101</td>
</tr>
<tr>
<td><strong>Protection from corrosion under conditions of condensation</strong></td>
<td>Conforms to IS :101</td>
<td>Conforms to IS :101</td>
</tr>
<tr>
<td><strong>Intumescence’s Ratio</strong></td>
<td>400% Approximately.</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Toxicity</strong></td>
<td>Non-Toxic</td>
<td>Non-Toxic</td>
</tr>
<tr>
<td><strong>Shelf Life</strong></td>
<td>1 Year at Room Temp when stored indoors in steel containers</td>
<td>1 Year at Room Temp when stored indoors in steel containers</td>
</tr>
<tr>
<td><strong>Packing Size</strong></td>
<td>Sturdy 20 Kgs. M.S. Drums.</td>
<td>Sturdy 20 Kgs. M.S. Drums</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>By Brush / Trowel</td>
<td>By Brush / Spray</td>
</tr>
</tbody>
</table>

## FIRE RESISTANCE

Although thickness of the coating to achieve the desired fire resistance depends upon the HP/A ratio generally the following dry coating thickness is adequate to achieve the desired fire rating for steel structures.

- **30Minutes rating** 1mm @ Approx. 1.8 kg/Sqm
- **60Minutes rating** 1.5mm @ Approx. 2.7 kg/Sqm
- **120Minutes rating** 3mm @ Approx. 5.4 kg/Sqm

The above consumption is assumed for HP/A ratio of 250. Consumption for I-section with lower HP/A ratio will be lower e.g. for HP/A ratio of 110 for one hour rating, the consumption of “LEXUS” STEELBAR FR-1101 would be 1.5 kg per Sqm with dry coating thickness of 0.8mm.

Note: where HP is the perimeter of the cross-section of the element exposed to the fire (in metres), and A is the cross–sectional Area of the element (in Sqm).

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CERTIFICATION

The product is tested & certified at CBRI Roorkee for one hour fire rating as per ASTM E-119 & BS: 476 Part-8.

SAFETY

“LEXUS” Steel bar FR-1101 presents no known health hazards during or after application. However, it is recommended that ventilation may be required during application since it is solvent based.

METHOD OF APPLICATION

1. Clean the surface of rust grease, dust etc.

2. Apply one coat of FR-1101 (Rfu) Anti-Corrosive Primer.

3. Apply one thin coat of “LEXUS” Steel Bar FR-1101 by brush. Allow it to dry for approximately 8 hours (touch dry), overcoat with FR-1101 in multiple coats allowing Approx. 8-10 hours time interval between each coat & build up to the desired thickness. Apply the top coat, if required.

4. 1mm dry coating thickness can be achieved in 4/5 coats.

5. Use thinner “LEXUS” WP 913 for thinning (if required) & for cleaning brush/equipment.

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